Science Georgia Standards of Excellence: Parent Q&A

How were the standards developed, when were they adopted, and when will they go into effect?

Georgia DOE led a yearlong revision process that began with input from more than 9,000 Georgia science teachers and more than 2,000 other stakeholders. This input drove the revision of the Georgia's existing science standards by committees that included teachers, science faculty, science education leaders, and community representatives. After a public comment period, the State BOE adopted the new standards in April 2016 for implementation in the 2017-2018 school year.

What are the standards?

Standards are the learning goals for what students should know and be able to do at each grade level. They are not curriculum and do not tell teachers how to teach; rather, they are used as a tool to help teachers know what to teach, to help parents know what children are expected to learn, and to help schools and teachers know what to assess. Teachers decides how best to help students achieve these goals.

Why are they important?

It has been two decades since the publication of the research reports on which Georgia's current science standards are based. Since then, there have been major advances in science and our understanding of how students learn science. The *Science GSE* provide a strong science education that equips students with the ability to think critically, analyze information, and solve complex problems—the skills needed to succeed in a rapidly and continuously changing world.

What is new in the *Science GSE*?

Based on input from teachers, stakeholders, content experts, and updated research in science education, the *Science GSE* incorporate several key features: clarification of content expectations; increased rigor by focusing on application of knowledge; stronger connections to literacy, mathematics, and engineering; and integration of science process and content through three-dimensional learning.

Three-dimensional learning allows students to actively do and experience science in a deep, meaningful way, not just learn about it from a textbook or a lecture. The standards accomplish this by integrating three dimensions of learning:

- **science disciplinary core ideas** (the content, for example, biology);
- **science and engineering practices** (how science is conducted in the real world, such as through planning and carrying out investigations); and
- **crosscutting concepts** (ideas, like *patterns*, that connect all sciences).

How will the *Science GSE* change my child's science classroom?

Teachers will emphasize scientific exploration and experimentation, instead of giving long lectures and expecting students to memorize lists of facts. You'll see engaging classroom experiences with children asking more questions, exploring and discussing possible solutions, investigating science concepts, and being fully active in the learning process. This approach mirrors real-world science practices and engages students deeply in the learning process.

PREPARING GEORGIA'S STUDENTS FOR A LIFETIME OF SCIENCE LEARNING

A strong foundation in science, technology, engineering, and mathematics (STEM) will put your child on the road to success in school and beyond. Important critical- thinking skills will cultivate the great thinkers and innovators of tomorrow and promote a better educated public. And, graduates in the STEM fields will have great job prospects. Young children ask many questions, just like scientists. But by the time kids get to middle school, many think that science is hard and means memorizing a lot of facts. Far too many kids never get a chance to explore and engage in science as it's done in the real world by scientists. The time has come to make a change and help *all* students develop a scientific way of thinking that will prepare them to be informed citizens and ready for college and careers.

The *Science Georgia Standards of Excellence (GSE)*—developed by teachers, scientists, leaders in science education, and other stakeholders from around the state—focus on the big ideas in science and emphasize the practices scientists use every day, such as planning investigations, developing models, and designing solutions.

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Three-Dimensions of Learning in Science

Science & Engineering Practices (SEP)	Disciplinary Core Ideas (DCI)	Crosscutting Concepts (CCC)
1. Asking Questions & Defining Problems 2. Developing & Using Models 3. Planning & Carrying Out Investigations 4. Analyzing & Interpreting Data 5. Using Mathematics & Computational Thinking 6. Constructing Explanations & Designing Solutions 7. Engaging in Argument from Evidence 8. Obtaining, Evaluating, Communicating Information	**Life Science** 1. From Molecules to Organisms: Structures & Processes 2. Ecosystems: Interactions, Energy, & Dynamics 3. Heredity: Inheritance & Variations of Traits 4. Biological Evolution: Unity & Diversity **Earth & Space Science** 1. Earth's Place in the Universe 2. Earth's Systems 3. Earth & Human Activity **Physical Science** 1. Matter & Its Interactions 2. Motion & Stability: Forces & Interactions 3. Energy 4. Waves & Their Application in Technology & Information Transfer **Engineering, Technology & the Application of Science** 1. Engineering Design 2. Links Among Engineering, Technology, Science, & Society	1. Patterns 2. Cause & Effect 3. Scale, Proportion, & Quantity 4. Systems & System Models 5. Energy & Matter 6. Structure & Function 7. Stability & Change

Sample Georgia Standards of Excellence

5th Grade			8th Grade			Biology		
S5L1b. Develop a model that illustrates how plants are sorted into groups (seed producers, non-seed producers) using data from multiple sources.			S8P3a. Analyze and interpret data to identify patterns in the relationships between speed and distance, and velocity and acceleration.			SB1d. Plan and carry out investigations to determine the role of cellular transport (e.g., active, passive, and osmosis) in maintaining homeostasis.		
SEP Develop & Using Models	DCI From Molecules to Organisms	CCC Structure & Function	SEP Analyze & Interpret Data	DCI Motion & Stability	CCC Patterns	SEP Plan & Carry out Investigations	DCI From Molecules to Organisms	CCC Stability & Change